



# Towards an Aptian (Lower Cretaceous) ammonite biostratigraphy of the Mina Texali section, Central Atlantic province (Puebla State, Central Mexico)



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## ABSTRACT

This work is a study of the ammonite record of a new stratigraphic section of Aptian age, at the Mina Texali (Puebla State, Central Mexico). A detailed biostratigraphic analysis was carried out on 309 specimens systematically sampled on a bed-by-bed basis. An Aptian ammonite zonation is proposed for the Mina Texali (= MT) section with two interval zones, *Dufrenoyia justinae* and *Caseyella* sp., and one informal biostratigraphic unit represented by the *Huastecoceras trispinosoides* beds. We also analyze the taxonomic composition, paleoecology and some systematic issues of the ammonite record of the MT section. The first record in Mexico of the genera *Pseudosaynella*, *Xerticeras* and the nautiloid *Heminautilus* is identified in this section. The ammonite assemblage is assigned to the proximal part of the outer neritic region of the continental shelf. The ammonite record of the studied section is diagnostic in establishing the lower-upper Aptian transition, and the local zonation of the MT provides important data for the development of an Aptian standard ammonite zonation for the Central Atlantic province.

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## 1. Introduction

A new Aptian standard ammonite zonation for the Central Atlantic province (the southern part of North America and Central America), is necessary because the differences with the Mediterranean region are significant (Moreno-Bedmar et al., 2013; Reboulet et al., 2014). Great strides have been made in the last decade or so towards this goal in northern Mexico (e.g., Barragán, 2001; Barragán Manzo and Méndez Franco, 2005; Barragán and Maurrasse, 2008), and a new Aptian Mexican zonation is starting to develop (Moreno-Bedmar et al., 2013). The work here focuses on the abundant ammonite record of the Mina Texali section (= MT), Puebla State, Central Mexico, which represents a new Mexican

ammonite biostratigraphic contribution that will aid in the development of a standard zonation for the Aptian of the Central Atlantic province. The ammonite richness of this Mexican section is comparable only to the ammonite record of the La Peña Formation of northeast Mexico. The MT section was sampled bed-by bed in six fieldwork campaigns during the last two years. By analyzing this ammonite record from a biostratigraphic point of view, we are able to develop a zonation for this particular section. We then compare this local, biostratigraphic scheme with the Mexican ammonite zonation of Moreno-Bedmar et al. (2013), and also with the standard Mediterranean ammonite zonation, Europe, of Reboulet et al. (2014). A short paleoecological analysis is also included, as well as systematic notes highlighting some of the taxonomic aspects.

## 2. Geographic location and stratigraphic setting

The study section is located in the southwestern corner of Puebla State, Mexico (Fig. 1) and is part of the region known as the Mixteca Terrain (Campa and Coney, 1983). An Early Cretaceous

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